Defoliation and its effect on morphology, biochemical parameters, yield and yield attributes of soybean

ABSTRACT

Loss of foliage in soybean crop through leaf eating insects and diseases is common in tropical and sub-tropical countries where farmers do not protect their crops adequately. Experiment was performed under sub-tropical condition (24°8' N, 90°0' E) with four levels of defoliations (0, 25, 50 and 75% from base of the canopy). Defoliations were imposed at the visible bud initiation stage to investigate the growth and yield attributes in two popular soybean varieties during January to April 2011. Results revealed that degrees of defoliations simultaneously decreased leaf area and total dry matter (TDM) production irrespective of varieties. Defoliation not only reduced source sizes but also decreased total sink (pod) production resulting in lower seed yields. However, basal 25% defoliation did not decrease TDM, seed weight/plant and seed yield/ha significantly indicating the fact that the soybean plant, in general, can tolerate 25% basal leaf loss of the canopy. Exceeding this threshold limit (>25%) of the canopy defoliation reduced TDM and seed yield significantly. Implication of the results in relation to pest management was also discussed.

Keyword: Canopy structure; Dry matter production; Seed yield; Sink; Source; Soybean